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ABSTRACT

Recent attempts at defining reading are grouped into studies which report on or speculate about some aspect of the reading process, attempt to generate broad theories or models, or attempt to develop particular models or partial models on the basis of research. Six issues and concerns are then stated which appear as recurrent needs in literature: (1) a more precise definition of reading behaviors; (2) clearer distincticns among process, language development, and pedagogical aspects of reading; (3) a more effective means of lccating and structuring research; (4) more rigorously scientific conduct and evaluation of research; (5) greater interdisciplinary research efforts; and (6) better coordinated program research. One effort to meet some of these needs was the 3-year project Application of the Convergence Technique to Basic Studies of the Reading Process. The report continues by outlining the convergence technique and its use in a five-phase program. The phases consist of (1) a comprehensive review and evaluation of research; (2) evaluating, expanding, or refuting the models defined by phase 1; (3) developing an instructional system; (4) delivering the system to classrooms; and (5) implementing the system nationwide. The report concludes with an operational definition of reading behavior. A bibliography is included. (MS)

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TOWARD A RESEARCH DEFINITION OF READING**

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When I was invited to prepare an address for the CCTE convention it was indicated that considerable interest had been expressed in having a session on the problem of definition in reading. This interest is probably a result of the fact that although the teaching of reading is one of the major activities of the school, the phenomenon itself is still poorly understood. We are still asking ourselves "Exactly what is reading?" and much yet remains to be done in developing a comprehensive theory of the underlying processes involved in reading. I was invited to focus on whatever aspects of the topic of definition in reading were of interest to me. At that time a major research effort was nearing completion titled, Application of the Convergence Technique to Basic Studies of the Reading Process (9). One of the thorny problems in that project was the whole matter of definition in reading and the relation between improved knowledge of the basic components of the reading process and more effective instruction in reading. The project attempted to outline some of the breakthrough activities needed to fill in the fundamental gaps that exist in our conceptual knowledge of reading. A part of this task was the explication of a definition of reading which could serve as a basis for improved empirical examination of reading behavior. Having been involved in the project I thought it might be of particular interest to this group if I spoke on the topic "Toward A Research Definition of Reading" and describe that project and some of the expected results.

By way of introduction I thought it might prove useful to set out some current issues and concerns related to improving our understanding of reading. I have used as my source for these issues and concerns the published research and discussion in the field. *** When examining the extant literature related to discussions of reading as a researchable phenomenon, one is always struck by the remarkable diversity and quantity of research which somehow has something to say

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*** The list of references includes some of the most useful recent publications which consider research on various aspects of the reading process, language development and reading, the teaching of reading, theory and model building in reading, the status of reading achievement, and discussions related to other aspects of our current knowledge of the state of the art on reading as a researchable phenomenon.

ED047903 356

about reading. Many sources have dealt with the quantity of research available and projects are now underway which I feel will go far in ordering our house in reading research. I have recently been involved in an effort which provides for more systematic identification, acquisition, organization, dissemination and analysis of the research literature in reading. In trying to arrive at over-riding issues and concerns I found it useful to group reports into three broad types as follows.

TYPE A reports give results or speculation related to some specific aspect of the reading process. An obvious example would be a report on the role of the grapheme/phoneme correspondence (or phoneme/grapheme correspondence as some people prefer to define it) in the teaching of early reading. Another would be the definition and sequencing of cognitive skills in the reading process as the reader moves from a very literal understanding of what is read to utilization of what are broadly termed higher level comprehension skills. A final example might be an examination of the use of the paired associate model from psychology in the examination of the learning of letter sound correspondences.

TYPE B reports are those which attempt some broader theorizing and model building working with a number of variables in attempting to define the reading process. Goodman's report (11) explicating reading behavior as a "psycholinguistic guessing game" is an example. Holmes (16) suggested the controversial sub strata factor theory as a model of the reading process. Gray (12), and later Robinson (25), developed a verbal descriptive model to serve as a communication vehicle in explicating some of the teaching aspects of reading. Finally, Carroll's (4) model suggesting reading as "talk written down", also represents this type of report.

TYPE C reports look across individual research studies and attempts to develop particular models or partial models of reading. They concentrate on the state of the art in model building or theorizing about the reading process and very often evaluate the existing knowledge and its short comings. A recent paper by Jenkinson (18) titled "Sources of Knowledge for Theories of Reading" falls into this category. Clymer's (6) yearbook chapter "What is Reading: Some Current Concepts" and Strang's (31) oft quoted address "The Reading Process and Its Ramifications" are also examples. The most extensive

example to date is the report of the research project mentioned previously which examines the use of the Convergence Technique as a strategy for improving research on the reading process.

A mass of research can be identified which relates to this three-fold classification. The following six areas represent issues and concerns which consistently appear in the literature.

1. In attempting to adequately define, research and understand reading as a phenomenon one has to begin with a consideration of the reading process - the sequence of identifiable observable and covert behaviors which make up the reading act. Existing statements of "What is Reading?" and specifications of the components of the process, are based on admittedly incomplete and often inadequate research. Basic research on the nature of the reading process could answer many of the perplexing questions in the field. Greater understanding of the process and its operation in individuals who are good readers, as well as those in difficulty, could lead to advances in the development of diagnostic procedures, reading instruction, and remediation of difficulties. One of the crucial needs is a more precise definition of reading behavior - a definition which allows for the examination of both the observable and covert responses present in the reading act. A better understanding of the process should also clear up much of the confusion and lead to development of more effective measuring instruments. Current general survey and diagnostic instruments leave much to be desired as true diagnostic tools which lead to prescriptions for teaching.
2. Clearer distinction including definitions needs to be made between the process of reading, language development as it relates to reading, and the pedagogical aspects of learning to read. The interaction between the three also needs to be more clearly understood to provide better direction to future research in reading.
3. Existing reading research is voluminous, fragmented and often unstructured in terms of underlying theory. Better effort is needed to locate reading related research within the traditional educational literature and from those disciplines outside education producing research which has some bearing on our understanding of reading. More effective tools should be developed to evaluate and synthesize existing and future research.
4. More rigorous scientific activity is needed in conducting reading research and evaluating the results. Such research also needs to be systematically

coordinated and developed through integrated theory and model building activities.

5. Greater interdisciplinary effort is needed in developing future research. The "invisible college" within the academic community with interests in reading and related areas needs to be identified and encouraged to communicate in conducting and evaluating research.

6. Although individual projects are certainly a valid part of the research process there is a need for well coordinated program type research to generate the multiplicity of studies needed to answer the overriding questions in the field. It is doubtful that any one individual or institution has the expertise or resources to conduct all the needed research.

Other generalizations or concerns could be identified in this cursory examination of the state of the art in reading but these examples will serve to illustrate the kinds of issues considered in generating the objectives of the convergence project. One more comment needs to be added. Most of the above issues and concerns exist within the broader oft expressed concern for the inadequate job that is now being done in teaching reading. Great concern is being expressed for the number of poor readers throughout the school population and our seeming inability to provide the type of program that will insure that all can read. The situation is felt to be so bad that we are currently mounting what will be a national effort to determine what is necessary in the way of research and development to insure that every student that comes to school can expect to receive instruction which will maximize his reading achievement throughout those school years and into adulthood. Although estimates of the magnitude of the problem vary there is increasing concensus that something must be done. This need has been formalized in a growing number of activities and projects labelled the "Right to Read" effort (14). The convergence project is one part of this larger effort to develop a truly effective literacy delivery system for education.

The activities of the convergence project took place over a three year span and involved more than 500 individuals as direct participants, reactors or advisors. As stated in the final report, five conditions generated the activities of the project. (9, p. 3).

1. Improvement in reading instruction seems to have reached a plateau.
2. Differing methods for teaching reading do not produce significantly different results.
3. A broadly accepted model of reading, showing its constituent elements and their interactions does not exist.
4. Summaries of research on reading indicate that most of the research in the field has been done in a manner that prohibits synthesis.
5. Previous attempts to concentrate emphasis on reading, undertaken on the part of funding agencies, have produced proposals for research on parts of the problem with little hope for cumulative resolution of the total problem.

In looking at past failures in developing a more coordinated attack on the problem of reading, a decision was made to utilize a management strategy which might lead to more productive results. The Convergence Technique (3), described by Carrese and Baker, was evaluated and finally selected as the procedure to be followed. The technique had been successfully used by the National Institute of Health, the National Cancer Institute, and in other projects. The technique utilizes systems analysis and an interdisciplinary team to develop the proposed research plan. The developed research program is systematically monitored and evaluated and also contains specifications for an information system. The Convergence Technique consists of:

(1) A planning session which initially delineates:
   (a) The goal to be achieved by the program
   (b) The subobjectives necessary for the achievement of that goal.
   (c) The sequence in which those subobjectives logically move to the goal.
   (d) The research needed to achieve each subobjective.
   (e) The criteria which must be met in order to conclude that each subobjective has been achieved.

(2) A diagram, called a Convergence Chart, which displays the five elements listed above.

(3) The use of the Convergence Chart in program management for decisions on:
   (a) Specific research projects to be undertaken
   (b) Movement to the next phase

(4) Updating the possible revision of the Convergence Chart on the basis of information generated as the research program progresses.

The application of the Convergence Technique to research on the reading process was conducted through a USOE contract with Phi Delta Kappa directed by Dr. William Gephart of PDK.

In developing the reading application two interdisciplinary planning teams, and an interdisciplinary team which tackled the problem of definition, were used. In addition, countless individuals served in reaction and consultant roles. Complete data on the deliberations of the three groups is available in the project report. A five phase program for reading was developed as a result of the planning team activities.

Phase I - Preresearch Activities (Literature searches and goal refinement work).
Phase II - Instructional System Component Research, Development and independent confirmation activities.
Phase III - Instructional System Assembly and Test
Phase IV - Delivery System Development and Test
Phase V - Implementation Strategy Assessment

The ultimate goal of the convergence plan is to specify the activities and research necessary to insure that every child is able to read well enough by age 10 so that he can become a competent reader as an adult. This goal is based on the assumption that the competent adult reader acquires the basic components for reading success by the time the fourth or fifth grade is completed. Exact specification of these basic components is a major activity of the project.

The Phase I activities consist of a comprehensive review and evaluation of the research literature centered around the identification and analysis of models, partial models and definitions related to the reading process, learning to read, and language development as it relates to reading. This phase will involve analysis of thousands of research activities. A special research profile technique will be used in this evaluation. These are the three agreed upon areas which represent the most pressing need in basic reading research. The following definitions have been developed to guide the activities of this phase (34).

Reading Process: The collection of real events which occur in a reader while he is engaged in reading behaviors. These events probably include physiological ones (neural, biochemical, etc), psychological ones (cognitive, perceptual, affective, etc.).

Reading behaviors are covert responses to written verbal language; they are indicated by overt performances which could not have occurred without the covert responses.

Learning-to-Read Process: The collection of real events which occur in an individual in response to formal reading instruction, informal reading instruction (e.g. random exposure to written verbal language in the environment), and other classes of stimuli necessary (but not now specifiable) to the development of reading abilities.

Other Language Development Related to Reading: The acquisition of speaking, listening, and writing abilities during the acquisition of reading abilities. In general, children are able to speak and to listen before they come to school and before they become able to read and write. Reading and writing are generally taught in the schools and as reading and writing ability develops, they begin to affect the student's ability to speak and to listen. This interaction is developmental throughout a person's life but most noticeable in the elementary and early secondary grades.

Model: A model is a representation of a phenomenon which displays the identifiable elements of the phenomenon and the relationships among those elements, and the processes through which those elements interact. Models serve three general purposes: (a) to explain what a complex phenomenon is; (b) to describe how the phenomenon works; and (c) to provide the basis for predicting the changes which will occur in one element of the phenomenon when changes are made in one or more other elements.

Partial Model: Models may be partial in either or both of two senses: (a) they may attempt to represent only a part of their target phenomenon; or (b) they may be only partially developed, given successful prediction as described in (c) above as the criterion for complete development.

Existing models, partial models and definitions are to be identified, described and merged where feasible.

Another Phase I activity consist of a comprehensive analysis of existing

instructional practices and outcomes in reading and an objective definition of the current status of reading achievement. The status survey will identify instructional methods and analyze, experiment with and modify them to come up with those that can reasonably be expected to be effective under various school situations and conditions.

A third Phase I activity is the development of a criterion referenced measure of literacy competency. The criterion based test, as opposed to the more common norm referenced instrument, will allow measurement of mastery of skills the researchers expect to identify as prerequisite to functional adult reading. Such instruments would indicate the skills a child has learned and those he has yet to master. The three Phase I activities just described have been funded, based on competitive proposals, and their preliminary results should be available by the summer of 1971. In essence, by then we can expect to have: (1) some tentative models to explain what happens in the reading process, what the learning sequences are, and how language development relates to reading development; (2) a good beginning on the development of a more adequate criterion literacy measure; and (3) a sort of Baedeker of instructional methods in reading pinpointing some which are particularly valid and reasonably effective in specific circumstances. In addition, an accurate estimate of the current status of reading achievement will be obtained. These Phase I activities are all in prelude to the next four phases in the convergence plan. The plan itself is really a vehicle for modifying the original plan as it develops based on feedback from the information and evaluation cycles.

In Phase II research will be conducted to expand or refute the tentative reading process, learning to read and language development models of Phase I. Prototype instructional materials and methods, based on the models, will emerge in this step to be tested in experimental situations. At this time certain of the programs identified in Phase I will also undergo experimentation to determine their usefulness with an eye toward development of an overall effective instructional system for reading.

Phase III will involve further work on the instructional system using the results of Phase I and II. Phase IV, delivery of the literacy system, involves moving from the laboratory and limited experimental situations to the classroom on a large scale. A proven instructional system should emerge which will have components that can be adapted to meet the needs of any school system in providing

effective reading instruction. In Phase V, the implementation stage, nationwide adoption of the system is contemplated. Many tough issues will have to be faced at this juncture - admittedly some distance in the future. To summarize, three activities related to analysis, synthesis, description and criterion development are now under way. At this point support is being developed to move into the remaining four phases at the proper time. The total implementation could take as few as five years or as long as twenty depending on the concensus developed and the allocation of resources.

At the conclusion of the first planning team activity it was decided that a definition of reading was needed which would serve as a basis for further research in reading. Consequently, the definition group was formed. In the opinion of the definition group a research program should be based on an "operational definition" of reading - a definition which by its nature assigns meaning to constructs or variables by specifying the activities or operations needed to measure the construct or variable. The following definition was developed. (9, pp.12-15).

READING BEHAVIORS are covert (1) responses (2) to verbal (4) written (5) language (3). These covert responses are indicated (7) by overt performance (6) which could not have occurred without (8) the covert responses to the written language.

(1) Covert responses. Acts or actions to a motive force that is hidden from observation. Physiological and psychological processing that is unobservable given current methodology is included as are the mental events and patterns of events that presumably mediate overt behaviors.

(2) Plurality of covert responses. In an effort to be explicit, emphasis is given to the idea that a variety of responses occur. This plurality is further emphasized through the pluralization of the term "reading behaviors".

(3) Language. The words and the methods of combining them used and understood by a considerable community and established by long usage.

(4) Verbal Language. This adjective is included to emphasize that the language in question is one of words. This adjective excludes

artistic, musical, and number languages from the definition.

(5) Written verbal language. Verbal language can be produced in either of two forms, visual or oral. The inclusion of the adjective "written" is intended to include language that is recorded in visual form and to exclude language that is oral.

(6) Overt performance. This term includes actions or activities that are observable with or without instrumentation.

(7) Indicated. A logical connection between the overt performance and the covert response is implied through the verb "indicated". The definition implies through this term that the observation of the overt performance shall be taken as evidence of the existence of covert responses.

(8) Could not have happened without. This bit of redundancy is included and emphasized to highlight the need for scientifically sound empirical evaluation which establishes that the overt performance is related to and/or caused by reading and not by other factors.

The definition provides an important operational base for reading research. It suggests that in conducting reading research one must: (1) identify those directly observable items, actions or events that are correlates of the covert responses; (2) determine with scientific conclusiveness the dependence of the overt performance on the covert responses; and (3) develop valid scales for quantifying those overt performances.

In conclusion we might again refer to some of the concerns and needs relative to reading which were indicated earlier. The long range research and development products emanating from the application of the Convergence Technique could provide better answers to many areas of concern in reading. Optimistically, this planning effort could be termed a major breakthrough. Even to those less sanguine it would be recognized that it could go far in improving the present state of the art and moving toward the day when every child who enters school can expect to be exposed to a program which will maximize his reading potential. A society which demands much of its youth should do no less than provide such instruction in the critical area of reading development.

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